Aleuritopteris gongshanensis (Pteridaceae), a New Species from Yunnan, China

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ABSTRACT. *Aleuritopteris gongshanensis* G. M. Zhang, a new species of Pteridaceae from Yunnan Province, China, is described and illustrated. The new species is very similar to *A. pseudoargentea* S. K. Wu, but differs in its ovate-deltate fronds with white farina abaxially, an indusial margin distinctly lacerate, and spores with a reticulate-cristate perine.

Key words: *Aleuritopteris*, China, Pteridaceae.

Aleuritopteris Fée is a middle-sized genus mainly distributed in Asia and Africa (Ching, 1941; Saiki, 1984a, 1984b; Shing & Wu, 1990; Wu, 1981). It is characterized by usually living in a xeric or semi-xeric habitat and having farina abaxially on fronds. This genus was reduced to synonymy of *Cheilanthes* Swartz by some pteridologists (Tryon et al., 1990). Recent studies (Gastony & Rollo, 1995), however, have shown that the species from the Old World are not closely related to those of real *Cheilanthes* from America and should belong to a different group. Here the authors prefer to accept *Aleuritopteris* rather than *Cheilanthes* as the generic name for the group from the Old World.

In revising the Chinese species of *Aleuritopteris*, the authors noticed that some specimens at PYU and PE were erroneously identified as *A. cremea* Ching (= *A. veitchii* (H. Christ) Ching). These specimens are distinguished by having finely dissected fronds, distinctly lacerate indusial margins, and spores with a reticulate-cristate perine. After examining the types of related taxa in *Aleuritopteris*, including *A. veitchii*, *A. pseudoargentea*, and *A. pentagona* Saiki, we confirmed that these specimens were different from the above known species.

Aleuritopteris gongshanensis G. M. Zhang, sp. nov. TYPE: China. Yunnan: Gongshan, Bingzhongluo, under thickets in dry, hot valley, ca. 1650 m, 28 June 1988, *W. M. Chu, H. Z. Yan, X. C. Zhang & G. F. Zhang 22789* (holotype, PYU; isotype, PE). Figures 1, 2.

Species *A. pseudoargenteae* affinis, sed laminis ovato-deltatis non pentagonis, subtus candido-farinosis, pinnis secundis a basalibus 1.5–4 cm remotis, ambitu conformibus sed minoribus aliquantum, indusiis margine laceratis, perisporis reticulato-cristatis differt.

Rhizomes short, erect, scaly; scales uniformly black or dark brown, concolorous, lanceolate, ca. 0.5 × 6 mm. Leaves monomorphic, clustered, 20–30 cm high; stipes 10–18 cm, longer than laminae, 1–1.5 mm diam., ebeneous, glossy, rounded adaxially, scaly at base (scales similar to those of rhizome); laminae ovate-deltate, caudate at tip, 8–13 × 4.5–8.5 cm, papyraceous or subcoriaceous, adaxially glabrous, abaxially with white farina, tripinnatifid at base; rachises similar to stipes, but sulcate adaxially; pinnae 5 to 8 pairs, usually opposite or sometimes alternate, oblique, sessile, basal pinnae largest, deltate, strongly inequilateral, 4–7 × 4–5 cm, bipinnatifid; pinnules 4 to 7 pairs, alternate; acroscopic pinnules much smaller, usually simple, ca. 8 × 3 mm, obtuse at apex, broadly adnate to costa; proximal basiscopic pinnules greatly enlarged, oblong, to 4 × 1.5 cm, pinnatifid; ultimate segments 4 to 5 pairs, oblong to ovate, ob-

Figure 1. *Aleuritopteris gongshanensis* G. M. Zhang. Drawn from the isotype, *W. M. Chu et al. 22789* (PE). —a. Habit. —b, c. Rhizome scales. —d. Ultimate segments. —e. Magnification of a segment. —f. Pseudoindusia.

tuse at apex, middle ones to 1.5 × 0.3 cm; second pinnae 1.5–4 cm apart from the basal ones, similar but smaller; upper pairs usually shorter than lower ones. Sori confluent at maturity; pseudoindusia narrow, membranous, continuous, with a lacerate margin. Sporangia 64-spored. Spores subglobose, 45 × 51 μm, with a reticulate-cristate perine.

Distribution and habitat. Specimens were collected only in northwestern and central Yunnan.

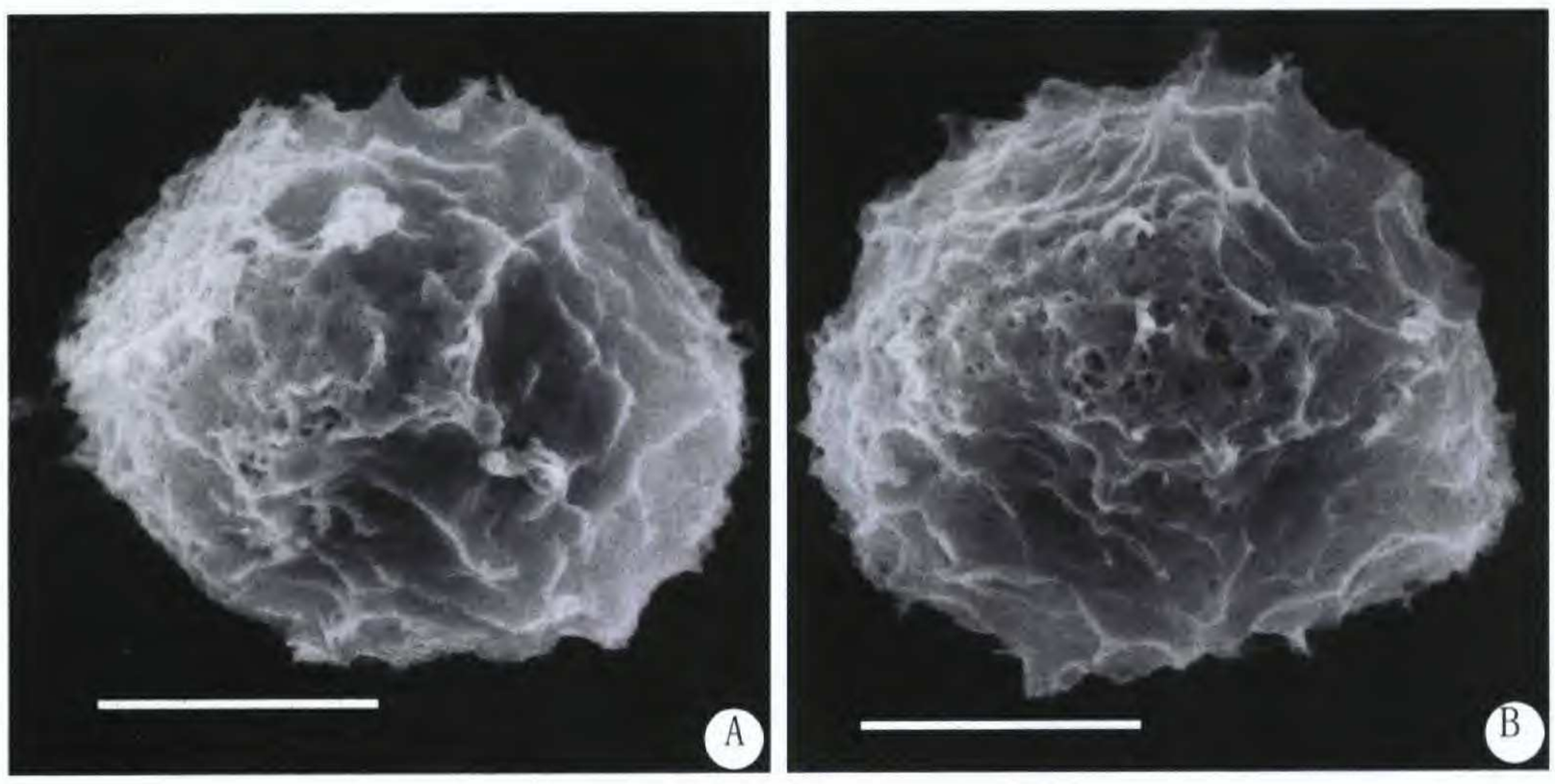

Figure 2. Spore morphology of *Aleuritopteris gongshanensis*. Spores taken from the isotype, *W. M. Chu et al. 22789* (PE). —A. Proximal view, ×780. —B. Distal view, ×780. Bar length = 23.1 μm.

The species usually grows under thickets in dry, hot valleys at ca. 1030–1700 m.

Aleuritopteris gongshanensis is similar to *A. pseudoargentea* and *A. veitchii* in its concolorous rhizome scales, but differs in its ovate-deltate fronds with white farina abaxially, an indusial margin distinctly lacerate, and spores with a reticulate-cristate perine. The new species is also similar to *A. pentagona*, but differs in its concolorous rhizome scales. The main differences between these species are summarized in the following key.

KEY TO *ALEURITOPTERIS GONGSHANENSIS* AND ITS RELATED SPECIES

1a. Scales on the rhizome dark brown to black, concolorous.
  2a. Indusial margin entire or slightly sinuous; fronds abaxially with yellow or light yellow farina.
    3a. Fronds coarsely dissected; spores with a reticulate perine . . *Aleuritopteris veitchii*
    3b. Fronds finely dissected; spores with a cristate perine . . . . . *Aleuritopteris pseudoargentea*
  2b. Indusial margin distinctly lacerate; fronds abaxially with white farina . . . . . *Aleuritopteris gongshanensis*
1b. Scales on the rhizome bicolorous, with dark central stripe and lighter margins . . . . . *Aleuritopteris pentagona*

Paratypes. CHINA. **Yunnan:** Gongshan, Bingzhongluo, 20 June 1985, *W. M. Chu et al. 17681* (PYU), *Qinghai-Xizang Exped. 7400* (KUN), 25 May 1960, *S. Jiang et al. 8745* (KUN, PE, PYU); nearby Gongshan county town, 3 Sep. 1988, *W. M. Chu et al. 22239* (PYU); Lushui, 14 Oct. 1988, *W. M. Chu et al. 22969* (PYU); Yimen, Xiaolüzhi, 20 Oct. 1965, *W. M. Chu 4664* (PYU), 26 Apr. 1983, *W. M. Chu et al. 15850* (PE, PYU).

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Literature Cited

Ching, R. C. 1941. The studies of Chinese ferns—XXXI. Hong Kong Naturalist 10: 194–204.

Gastony, G. J. & D. R. Rollo. 1995. Phylogeny and generic circumscriptions of cheilanthoid ferns (Pteridaceae: Cheilanthoideae) inferred from *rbc*L nucleotide sequences. Amer. Fern J. 85: 341–360.

Saiki, Y. 1984a. Note on ferns (2). Asiatic species of the *Aleuritopteris farinosa* complex. J. Phytogeogr. Taxon. 32(1): 1–12.

———. 1984b. Note on ferns (3). African and Neotropical species of the *Aleuritopteris farinosa* group. J. Phytogeogr. Taxon. 32(2): 81–90.

Shing, K. H. & S. K. Wu. 1990. Sinopteridaceae. Pp. 97–173 *in* R. C. Ching & K. H. Shing (editors), Flora Reipublicae Popularis Sinicae 3(1). Science Press, Beijing.

Tryon, R. M., A. F. Tryon & K. U. Kramer. 1990. *Cheilanthes* Sw. Pp. 242 *in* K. Kubitzki (editor), The Families and Genera of Vascular Plants, Vol. 1. Pteridophytes and Gymnosperms, K. U. Kramer & P. S. Green (volume editors). Springer-Verlag, Berlin.

Wu, S. K. 1981. A study of the genus *Aleuritopteris* Fée in China. Acta Phytotax. Sin. 19(1): 57–74.